

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Rejection of Claims 22-24, 26, 27, 29, 34-36, 39, and 43 Under 35 USC §102(b) in view of U.S. Patent No. 2,978,621 (Martinek)

This rejection is respectfully traversed on the grounds that the Martinek patent fails to disclose or suggest a rotor arranged to be axially displaced in response to reverse torque resulting from interaction between said rotor, said magnetic field structure, and a load or driving device, and in which displacement of the rotor in response to the reverse torque *causes* the electrical characteristics of the machine to be varied. In the Martinek patent, reverse torque does **not cause** the electrical characteristics of the machine to be varied, because, at the time the rotor 5 is moved, screw 10 is **stationary** and cannot possibly transmit any torque.

The motor of Martinek operates as follows:

- a. At start-up, the motor speed is relatively slow and shaft 4 turns relative to shaft 10, while shaft 10 remains stationary, thereby causing rotor 5 to move axially until it reaches the rightmost or leftmost extent of its travel.
- b. When rotor 5 can no longer move axially, shaft 4 also can no longer move axially, and shaft 10 begins to turn. At this point, reverse torque acts on the shaft, but the axial rotor position does not change.

Unlike the claimed invention, in which the rotor moves axially relative to the stator in response to reverse torque, **Martinek's shaft 10 connected to the load does not even begin to rotate until axial motion is completed**. The axial motion does not affect the characteristics of the motor, but merely allows the motor to get up to speed *before* reverse torque kicks in. This is exactly contrary to the claimed invention.

According to the Examiner, "varying the axial position of the rotor of Martinek has effect on the electrical characteristics of the motor because the when [sic] the armature (5) is displaced

from the center position, the magnetic interaction between the stator (2) and the armature can no longer be 100%.” This argument is incorrect. Since the stator 2 of Martinek is larger than the rotor 5, the entire rotor of Martinek faces, and interacts with, the stator at all times and will generate the same characteristics (except possibly at the end of the travel, where a tiny *de minimus* portion of the rotor is depicted as extending between the end of the stator). In general, the characteristics of the motor will be the same at all positions of the rotor since there is no disclosure that either the stator 2 or rotor 5 of Martinek is non-uniform. To the contrary, there is no possible reason for non-uniformity since Martinek is concerned solely with the clutch effect of the two shafts, *i.e.*, with preventing transmission of torque until the motor builds up speed. Preventing transmission of torque until a motor builds up speed, as in Martinek, is not the same as varying motor characteristics based on transmission of torque back to the motor. By the time torque is transmitted back to the motor of Martinek (after the motor has reached operating speed and the rotor has assumed a final position), the characteristics of the motor no longer can vary because the rotor no longer can change position.

While Martinek can alter the electrical characteristics of its motor, it must do so using the external circuits illustrated in Figs. 2-6. The resulting changes are not the result of rotor displacement, which is only used to prevent turning of shaft 10 during start-up, but rather the result of movement of shaft 10 after the rotor has stopped being axially displaced.

The Examiner might be correct that when the rotor of Martinek is displaced to its final position, the magnetic interaction can no longer be 100% (due to the extension of the rotor beyond the end of the stator, as depicted in Fig. 1 of the Martinek patent). However, screw 10 does not even begin to turn until rotor 5 and shaft 4 moved to a final axial position, at which point the magnetic interaction does **not** change. If it is 90% in that position, then it stays at 90%. There is no suggestion of

...vary[ing] electrical machinery characteristics of said electric machine, in response to reverse torque resulting from interaction between said rotor, said magnetic field structure, and a load or driving device,

as recited in claim 1. During the period when the motor of Martinek is speeding up and the rotor is moving axially, there is no reverse torque because shaft 10 is stationary, and therefore Martinek could not possibly be said anticipate the claimed varying of electrical machine characteristics in response to reverse torque resulting from interaction between the rotor, the magnetic field structure, and the load.

Even though the rotor of Martinek is separated from the field structure by a fixed radial gap, as in the claimed invention, the motor of Martinek differs from the claimed invention in one critical respect: the motor of Martinek is a DC rather than an AC motor. As a result, varying the axial position of the rotor has no effect on the electrical characteristics of the motor. Instead, axial displacement of the rotor of Martinek only occurs during start-up, and is included for the purpose of delaying transmission of torque from the armature to the shaft until the armature is up-to-speed in order to avoid undue stress on the motor. This has nothing to do with, and does not “read on,” the claimed invention, and therefore withdrawal of the rejection of claims 22-24, 26, 27, 29, 34-36, 39, and 43 is respectfully requested.

2. Rejection of Claims 28 and 38 Under 35 USC §103(a) in view of U.S. Patent Nos. 2,978,621 (Martinek) and 1,131,551 (Price)

This rejection is respectfully traversed on the grounds that the Price patent, like the Martinek patent, fails to disclose or suggest varying electrical characteristics by axially displacing the stator in response to reverse torque. To the contrary, the electrical machine of Price is designed to have a **varying air gap** in order to maintain a constant output voltage, as explained in col. 1, lines 9-20. This is exactly opposite to the claimed **constant gap and varying electrical characteristics**, and therefore withdrawal of the rejection of claims 28 and 38 under 35 USC §102(b) in view of the Price patent is respectfully requested.

3. Rejection of Claims 31-33, 37, and 40-42 Under 35 USC §103(a) in view of U.S. Patent Nos. 2,978,621 (Martinek) and 2,694,781 (Hinz)

This rejection is respectfully traversed on the grounds that the Hinz patent, like the Martinek patent, fails to disclose or suggest varying electrical characteristics by axially displacing the stator in response to reverse torque.

Instead, the Hinz patent discloses a motor designed to generate an axial thrust, in addition to rotation, in such a way that the “*axial force. . .remains constant along the path of displacement.*” There is no suggestion in Hinz of varying the electrical characteristics of the motor in response to axial displacement of the rotor, and certainly no suggestion that the rotor structure disclosed therein should be applied to a motor of the type disclosed by Martinek, in which axial displacement of the rotor is used to prevent rotation of a shaft until the motor reaches a speed at which reverse torque will not have a negative effect.

Since Martinek only moves the rotor during start-up, before shaft 10 starts turning, there is no possible reason to vary the physical properties of the rotor and/or magnetic field structure, as recited in various dependent claims of the present application (such as claims 31-33 and 40-42), much less provide a rotor that has a length greater than that of the magnetic field structure (claim 37). The Hinz patent does not provide any such reason for contradicting the basic teachings of Martinek since Hinz concerns an entirely different type of motor than the motor of Martinek. Accordingly, it would not have been obvious to combine the motors of Martinek and Hinz, and withdrawal of the rejection of claims 31-33, 37, and 40-42 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, withdrawal of the rejections and expedited passage of the application to issue is requested.

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Respectfully submitted,

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